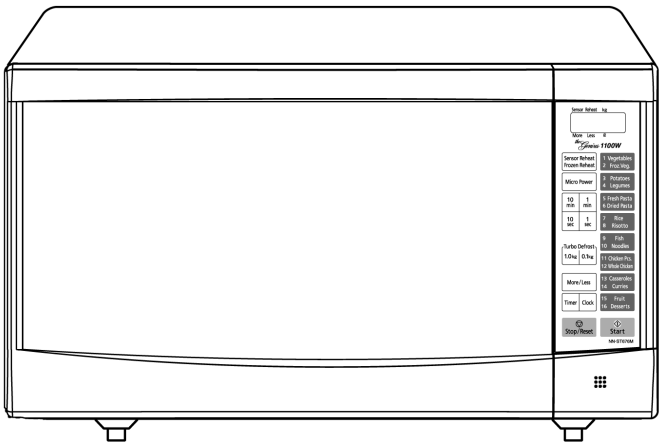
ORDER NO.PHAMOS0605028A3

Service Manual

Microwave Oven

Simplified



NN-SD686S
NN-ST676M
NN-ST666W
NN-ST656W

QPQ(Australia & New Zealand)

Please file and use this manual together with the service manual for Model NN-S560WF (ORDER NO. SIMMC0006012C3)

Specifications:

Specifications: / Models:	SD686S	ST676M	ST666W	ST656W
Power Source:	230V-240V AC Single Phase, 50Hz			
Power Requirement:	1120W	1120W	1120W	1120W
Output:	1100W	1100W	1100W	1100W
Microwave Frequency:	2450MHz			
Timer:	90 min. 00 sec.	99 min. 99 sec.		
Outside Dimensions:	518mm(W) X 404mm(D) X301mm(H)			
Oven Cavity Dimensions:	375mm(W) X 386mm(D) X 225mm(H)			
Weight:	12.0 kg			
PbF	This product with PbF			
Specifications subject to change without notice.				

Panasonic®

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

WARNING

1. This product should be serviced only by trained, qualified personnel.
2. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage."
3. If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
4. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts be replaced only with the manufacture's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the orginal design.

This service manual covers products for following markets.
When troubleshooting or replacing parts, please refer to the country identifications shown below for your applicable product specification.

QPQ ..... For Australia & New Zealand

CAUTION

About lead free solder (PbF)

Distinction of PbF PCB: PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

Caution:
- Pb free solder has a higher melting point than standard solder; Typically the melting point is 30 - 40˚C higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 370 ± 10˚C.
- Pb free solder will tend to splash when heated too high (about 600˚C).

DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LIVE) OF THE INVERTER POWER SUPPLY (U)

INVERTER WARNING

This Inverter board looks like a regular PCB. However, this PCB drives the magnetron tube with extremely high voltage and high current. NEW H.V.

IT HAS:

1. **Very high voltage and high current circuits.**
   It functions the same as the high voltage transformer and high voltage capacitor in ordinary microwave ovens.
2. **Aluminum heat sink that is energized with very high voltage and high heat energy.**
3. **Very high voltage which may remain in circuitry even when oven is off. High voltage charge may remain in the capacitors on the board.**

DO NOT:

* 1. **Do not touch circuitry because it has very hot (high voltage) circuitry. Even when replacing board, extreme care should be taken to avoid possible electric shock hazards. High voltage charge may remain in circuits.**

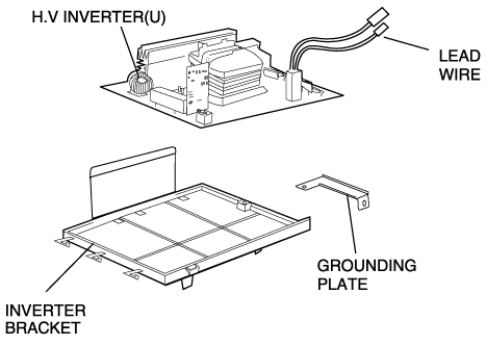
* 2. **Do not touch aluminum heat sink because it is energized with very high voltage and is also very hot in high heat energy.**

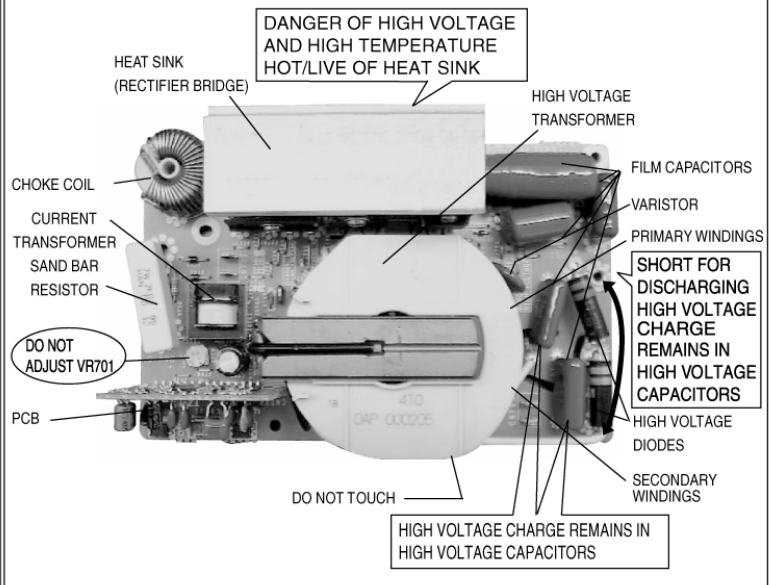
* 3. **Do not try to adjust or tamper with preset control on the Inverter board because it is very dangerous to adjust without proper test equipment.**

* 4. **Do not test oven while Inverter grounding plate or screws are loose. It is very dangerous to operate H.V. Inverter Circuit (U) with loose mounting screws or if improperly grounded.**

* 5. **Do not try to repair Inverter PCB because it is very dangerous to repair. Replace as a complete High Voltage Inverter Circuit unit.**

INVERTER POWER SUPPLY





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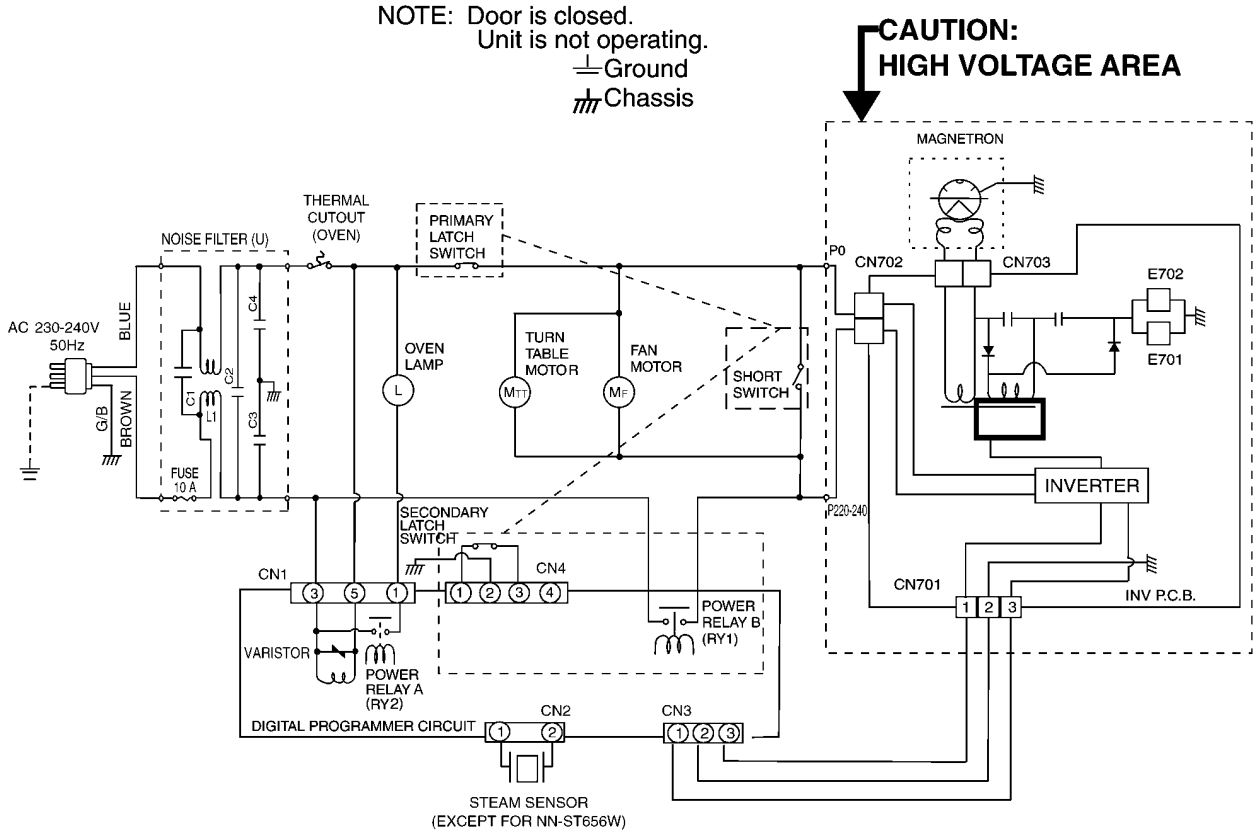
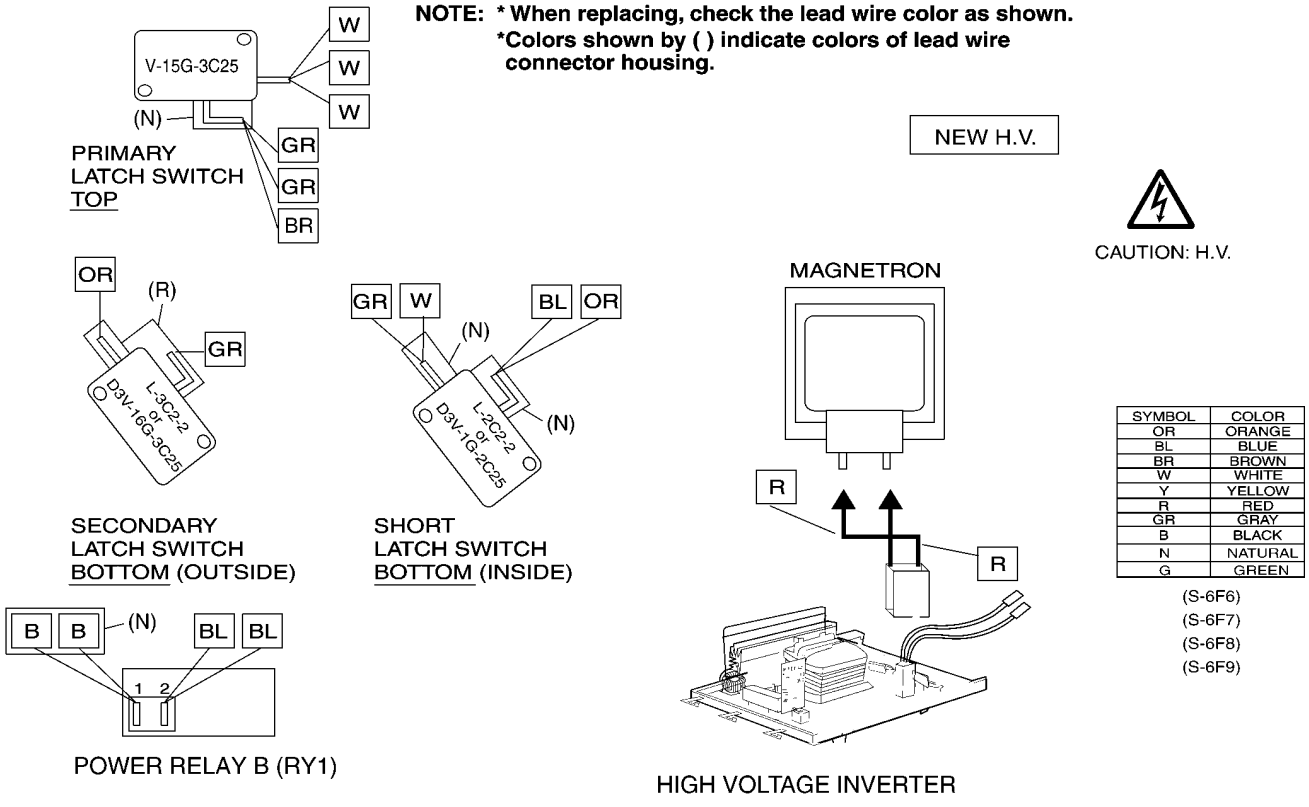
1 SCHEMATIC DIAGRAM



WIRING DIAGRAM



2 CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is a high voltage, high current device. It is free from danger in ordinary use, though extreme care should be taken during repair.

Caution

Servicemen should remove their watches whenever working close to or replacing the magnetron.

2.1. Check the grounding

Do not operate on a two wire extension cord. The microwave oven is designed to be grounded when used. It is imperative, therefore, to ensure the appliance is properly grounded before beginning repair work.

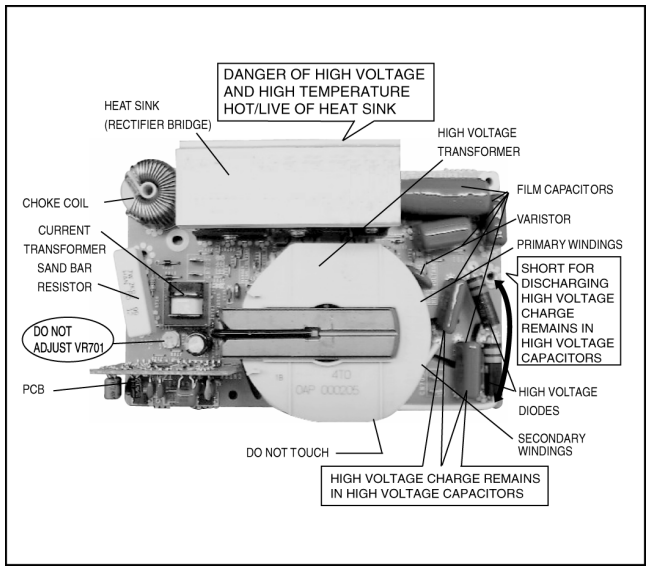
2.2. Inverter warnings

DANGER, HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LINE) OF THE INVERTER POWER SUPPLY (U)

The high voltage inverter power supply handles very high voltage and current for the magnetron tube. Though it is free from danger in ordinary use, extreme care should be taken during repair.

The aluminum heat sink is also energized with high voltage (HOT), do not touch when the AC input terminals are energized. The power device Collector is directly connected to the aluminum heat sink.

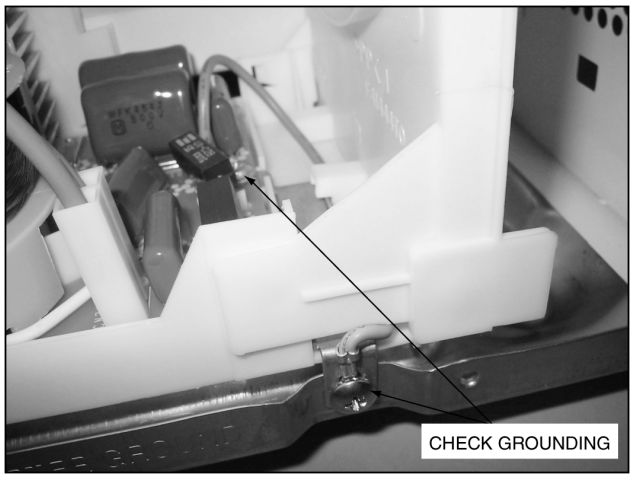
The aluminum heat sink may be HOT due to heat energy, therefore, extreme care should be taken during servicing.


DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE HOT/LIVE OF HEAT SINK
HEAT SINK (RECTIFIER BRIDGE)
HIGH VOLTAGE TRANSFORMER
CHOKE COIL
CURRENT TRANSFORMER SAND BAR RESISTOR
DO NOT ADJUST VR701
PCB
FILM CAPACITORS
VARISTOR
PRIMARY WINDINGS
SHORT FOR DISCHARGING HIGH VOLTAGE CHARGE REMAINS IN HIGH VOLTAGE CAPACITORS
HIGH VOLTAGE DIODES
SECONDARY WINDINGS
DO NOT TOUCH
HIGH VOLTAGE CHARGE REMAINS IN HIGH VOLTAGE CAPACITORS

H.V. Inverter warning

WARNING FOR INVERTER POWER SUPPLY (U) GROUNDING

Check the high voltage inverter power supply circuit grounding. The high voltage inverter power supply circuit board must have a proper chassis ground. The inverter grounding bracket must be connected to the chassis. If the inverter board is not grounded it will expose the user to very high voltages and cause extreme DANGER! Be sure that the inverter circuit is properly grounded via the inverter earth bracket.

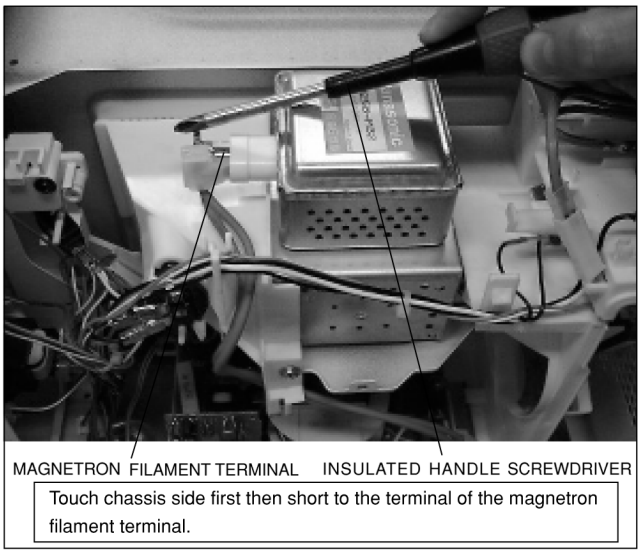


Grounding of the inverter circuit board

WARNING! DISCHARGE THE HIGH VOLATGE CAPACITORS

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitors in the inverter power supply circuit board.

When replacing or checking parts, remove the power plug from the outlet and short the inverter output terminal of the magnetron filament terminals to the chassis ground with an insulated handle screwdriver to discharge. Please be sure to touch the chassis ground side first and then short to the output terminals.


MAGNETRON FILAMENT TERMINAL
INSULATED HANDLE SCREWDRIVER
Touch chassis side first then short to the terminal of the magnetron filament terminal.

Discharging the high voltage capacitors

WARNING

There is high voltage present with high current capabilities in the circuits of the primary and secondary windings, choke coil and heat sink of the inverter. It is extremely dangerous to work on or near these circuits with the oven energized. DO NOT measure the voltage in the high voltage circuit including the filament voltage of the magnetron.

WARNING

Never touch any circuit wiring with your hand or with an insulated tool during operation.

2.3. Part replacement.

When any part or component is to be replaced, always ensure that the power cord is removed from the wall outlet.

2.4. When the 10A fuse is blown due to the operation of the short switch:

WARNING

When the 10A 250V fuse is blown due to the operation of the interlock monitor switch, replace all of the components (primary latch switch, door switch, short switch and power relay B (RY1)).

1. This is mandatory. Refer to “adjustments and measurements” for the location of these switches.
2. When replacing the fuse, confirm that it has the appropriate rating for these models.
3. When replacing faulty switches, be sure the mounting tabs are not bent, broken or deficient in their ability to hold the switches.

2.5. Avoid inserting nails, wire etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any holes or gaps, because such objects may work as an antenna and cause microwave leakage.

2.6. Confirm after repair

1. After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing. Microwaves might leak if screws are not properly tightened.
2. Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
3. Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage).

CAUTION MICROWAVE RADIATION

USE CAUTION NOT TO BECOME EXPOSED TO RADIATION FROM THE MICROWAVE MAGNETRON OR OTHER PARTS CONDUCTING MICROWAVE ENERGY

IMPORTANT NOTICE

The following components have potentials above 2000V while the appliance is operated.

- Magnetron
- High voltage transformer (Located on inverter (U))
- High voltage diodes (Located on inverter (U))
- High voltage capacitors (Located on inverter (U))

Pay special attention to these areas.

When the appliance is operated with the door hinges or magnetron installed incorrectly, the microwave leakage can exceed more than 5mW/cm^2. After repair or exchange, it is very important to check if the magnetron and the door hinges are correctly installed.

2.7. Sharp edges

Caution

Please use caution when unpacking, installing or moving the unit, as some exposed edges may be sharp to the touch and cause injury if not handled with care.

3 MEASUREMENTS AND ADJUSTMENTS

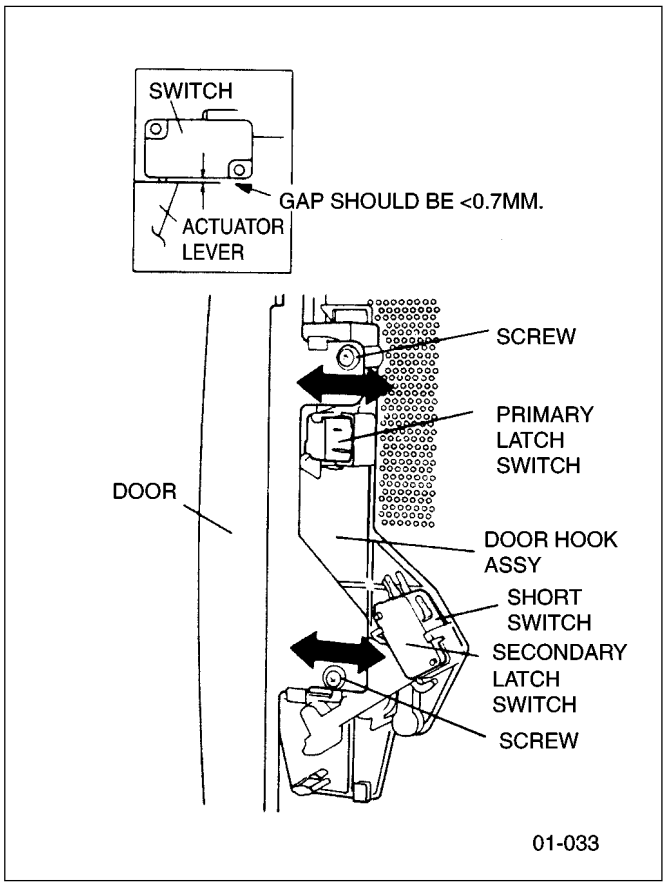
3.1. Adjustment of primary latch switch, secondary latch switch and short switch.

1. Mount the Primary latch switch, the secondary latch switch and the short switch to the door hook assembly as shown in ILL.

   NOTE:

   No specific individual adjustments during installation of the Primary latch switch, Secondary latch switch or Short switch to the door hook are required.

2. When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of the arrows in the illustration, so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.
3. Reconnect the short switch and check the continuity of the monitor circuit and all latch switches again by following the component test procedures.



3.2. Measurement of microwave output

The output power of the magnetron can be determined by performing IEC standard test procedures. However,due to the complexity of IEC test procedures, it is recommended to test the magnetron using the simple method outlined below.

Necessary Equipment:

*1 liter beaker *Glass thermometer
*Wrist watch or stopwatch

NOTE:

Check the line voltage under load.Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurately as possible.

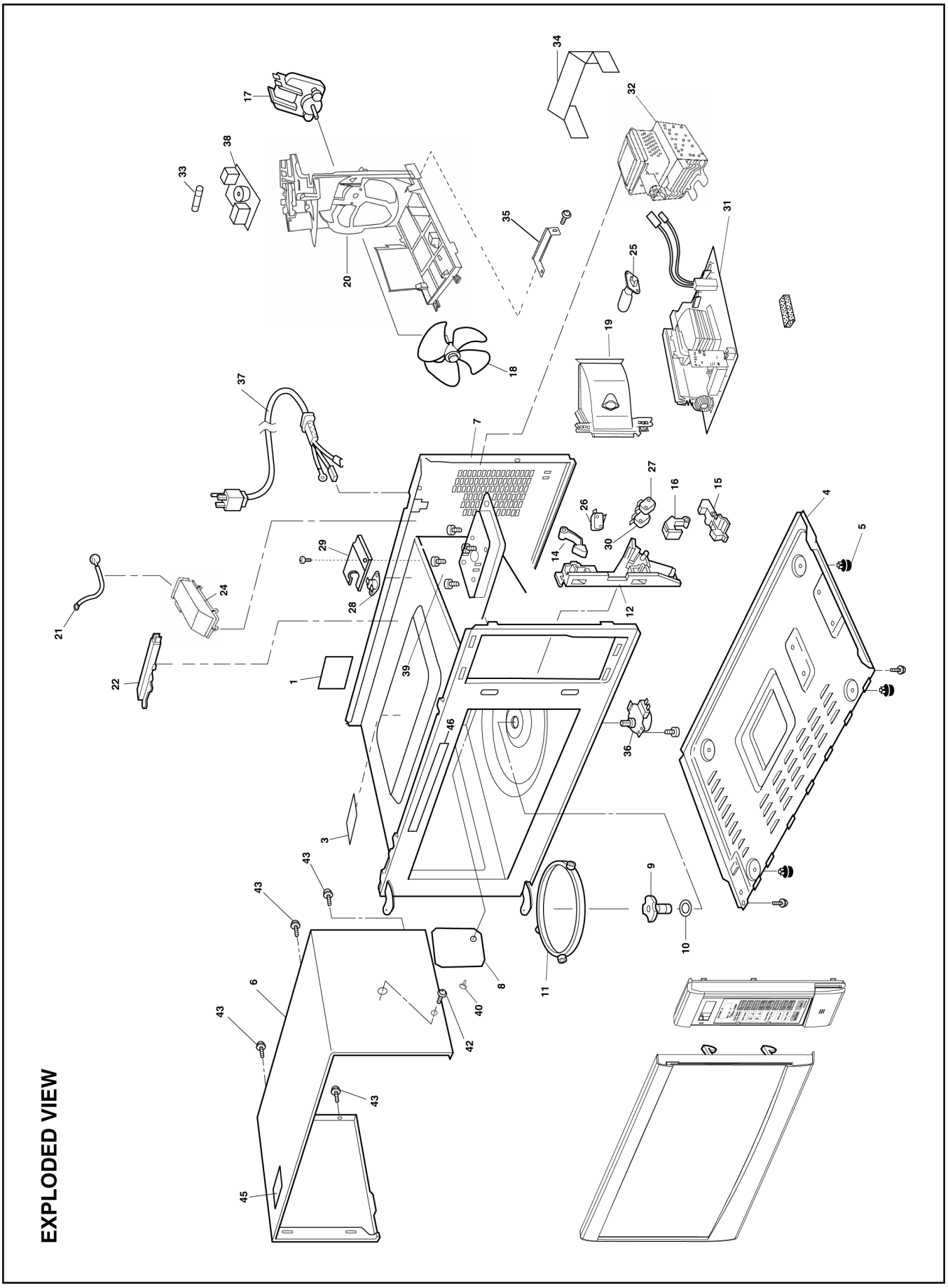
1. Fill the beaker with exactly one liter of tap water.Stir the water using the thermometer and record the water's temperature. (recorded as T1).
2. Place the beaker on the center of glass tray.
   Set the oven for High power and heat it for exactly one minute.
3. Stir the water again and read the temperature of the water. (recorded as T2).
4. The normal temperature rise at High power level for each model, is as shown in table.

TABLE (1L-1min.test)

RATED OUTPUT	TEMPERATURE RISE
1100W	Min. 9.4°C

4 EXPLODED VIEW AND PARTS LIST

4.1. EXPLODED VIEW



4.2. PARTS LIST

NOTE:

1. When ordering replacement part(s), please use part number(s) shown in this part list.
   Do not use description of the part.
2. Important safety notice:
   Components identified by mark have special characteristics important for safety.
   When replacing any of these components, use only manufacture's specified parts.

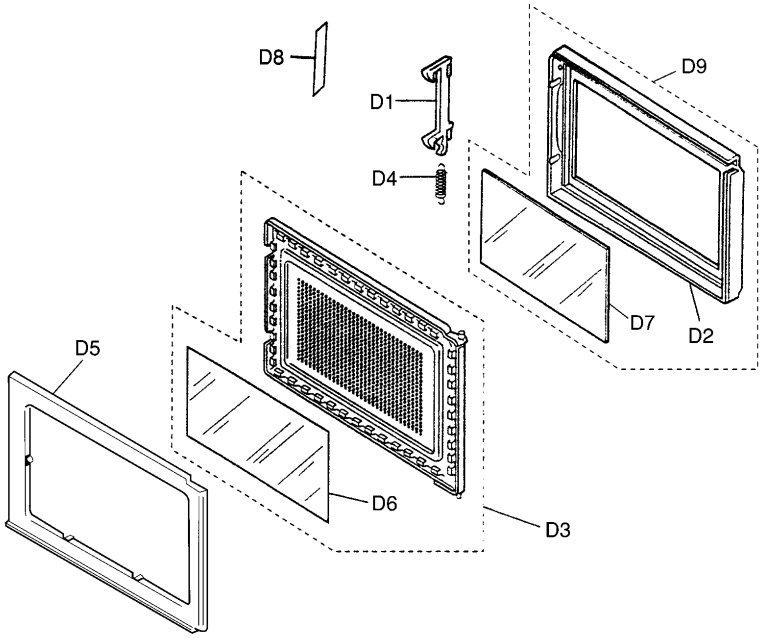
NOTE:

"A" parts are supplied by CSD (Japan)

"F" parts are supplied by PHAMOS (China)

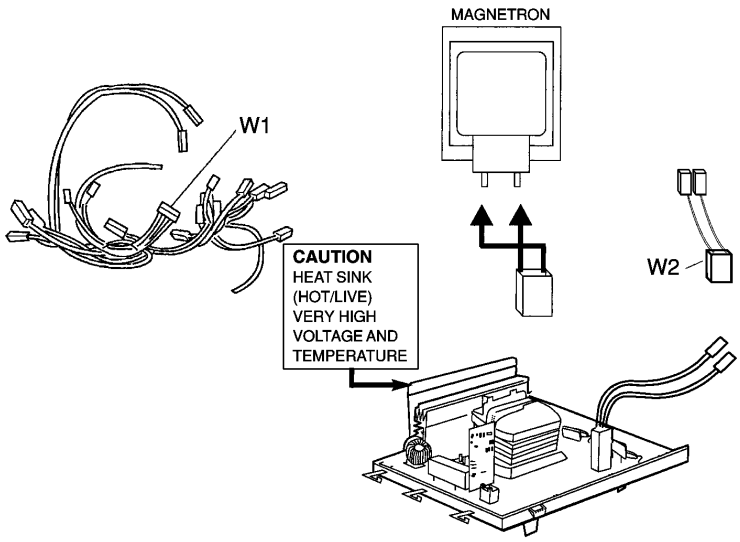
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
1		F00066V00HP	CAUTION LABEL	1	
3		F21555500AP	OVEN STICKY PAPER	1	
4		F10014T00APG	BASE	1	
5		F10084T00AP	RUBBER FOOT	4	
6		F110D5Y00SAP	CABINET BODY(U)	1	SD686S
6		F110D5Y60SAP	CABINET BODY(U)	1	ST676M
6		F110D5Y30HAP	CABINET BODY(U)	1	ST666W,ST656W
7	⚠	F200A8F00AP	OVEN(U)	1	SD686S,ST676M,ST666W
7	⚠	F200A8F40AP	OVEN(U)	1	ST656W
8		F20555L00AP	COVER	1	
9		F21315Y00AP	PULLY SHAFT	1	
10		F2177-F80	WASHER	1	
11		F290D9330AP	ROLLER RING(U)	1	
12	⚠	F30206G30AP	DOOR HOOK	1	
14		F31366G30AP	HOOK LEVER A	1	
15		F31376G30AP	HOOK LEVER B	1	
16		F31386G30AP	HOOK LEVER C	1	
17		F400A6V00QP	FAN MOTOR	1	AC240V,SINGLE PHASE,50Hz
18		F40084T00AP	FAN BLADE	1	
19		F40257D00APG	AIR GUIDE A	1	
20		F41444T00AP	ORIFICE	1	
21		A707S4T00AP	STEAM SENSOR	1	SD686S,ST676M,ST666W
22		F64508660AP	SENSOR COVER B	1	SD686S,ST676M,ST666W
24		F65434T00AP	SENSOR COVER C	1	SD686S,ST676M,ST666W
25		F612E8F60QP	INCANDESCENT LAMP (U)	1	
26	⚠	J61415G10XN	MICRO SWITCH	1	(PRIMARY LATCH SWITCH) (V-15G-3C25)
27	⚠	J61414T00AP	MICRO SWITCH	1	(SECONDARY LATCH SWITCH) (D3V-16G-3C25)
28	⚠	F61455L00CP	THERMAL CUTOUT	1	105°C
29		F66264T00CP	THERMAL CUTOUT INSULATION BRACKET	1	
30	⚠	F61785U30XN	MICRO SWITCH	1	(SHORT SWITCH) (D3V-1G-2C25)
31	⚠	F606Y4V00XN	H.V.INVERTER (U)	1	
32	⚠	2M261-M32J3Y	MAGNETRON	1	
33	⚠	F62306V60BP	FUSE	1	10A/240V,50Hz
34		F40264T60APG	AIR GUIDE B	1	
35		F61844T00AP	GROUNDING PLATE	1	
36		F63265U30XN	TURNTABLE MOTOR	1	
37	⚠	F900C9660QP	AC CORD W/PLUG	1	
38		F692Y8A00QP	NOISE FILTER (U)	1	
39		XTWFA4+12T	SCREW	4	FOR MAGNETRON
40		XTTFA4+6BN	SCREW	1	FOR COVER
42		XTCAFA4+12AFM	SCREW	1	FOR CABINET BODY SIDE (SD686S)
42		XTCAFA4+12AFS	SCREW	1	FOR CABINET BODY SIDE (ST676M)
42		XTCAFA4+12AFW	SCREW	1	FOR CABINET BODY SIDE (ST666W,ST656W)
43		XTWFA4+12D	SCREW	4	FOR CABINET BODY
45		F02445Y00AP	CAUTION LABEL	1	SD686S
46		F03348F60QP	MENU LABEL	1	SD686S

4.3. DOOR ASSEMBLY



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
D1		F3018-1200	DOOR KEY A	1	
D2	⚠	F301A8F70SQP	DOOR A	1	ST676M
D2	⚠	F301A8F70HQP	DOOR A	1	ST666W,ST656W
D3	⚠	F302K5L00AP	DOOR E (U)	1	
D4		F30215G10XN	DOOR KEY SPRING	1	
D5	⚠	F30854T00AP	DOOR C	1	
D6	⚠	F31456V60XP	DOOR SCREEN A	1	
D7		F31468F70BQP	DOOR SCREEN B	1	ST676M,ST666W,ST656W
D8		F01726V00JP	CAUTION LABEL B	1	
D9	⚠	F301A8F60SQP	DOOR A (U)	1	SD686S

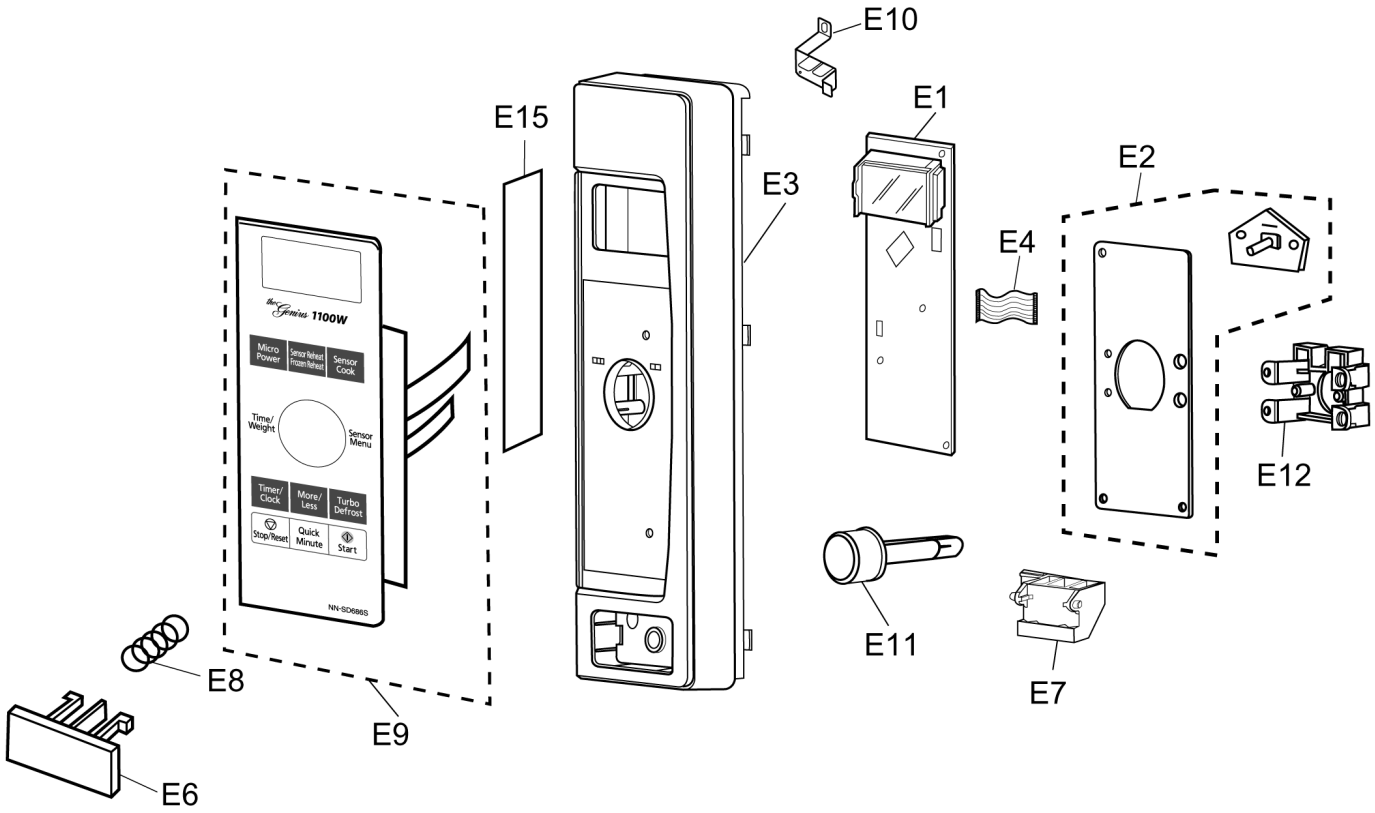
4.4. WIRING MATERIALS



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
W1		F030A8A00QP	LEAD WIRE HARNESS	1	
W2		F030E8A00QP	H.V.LEAD WIRE	1	

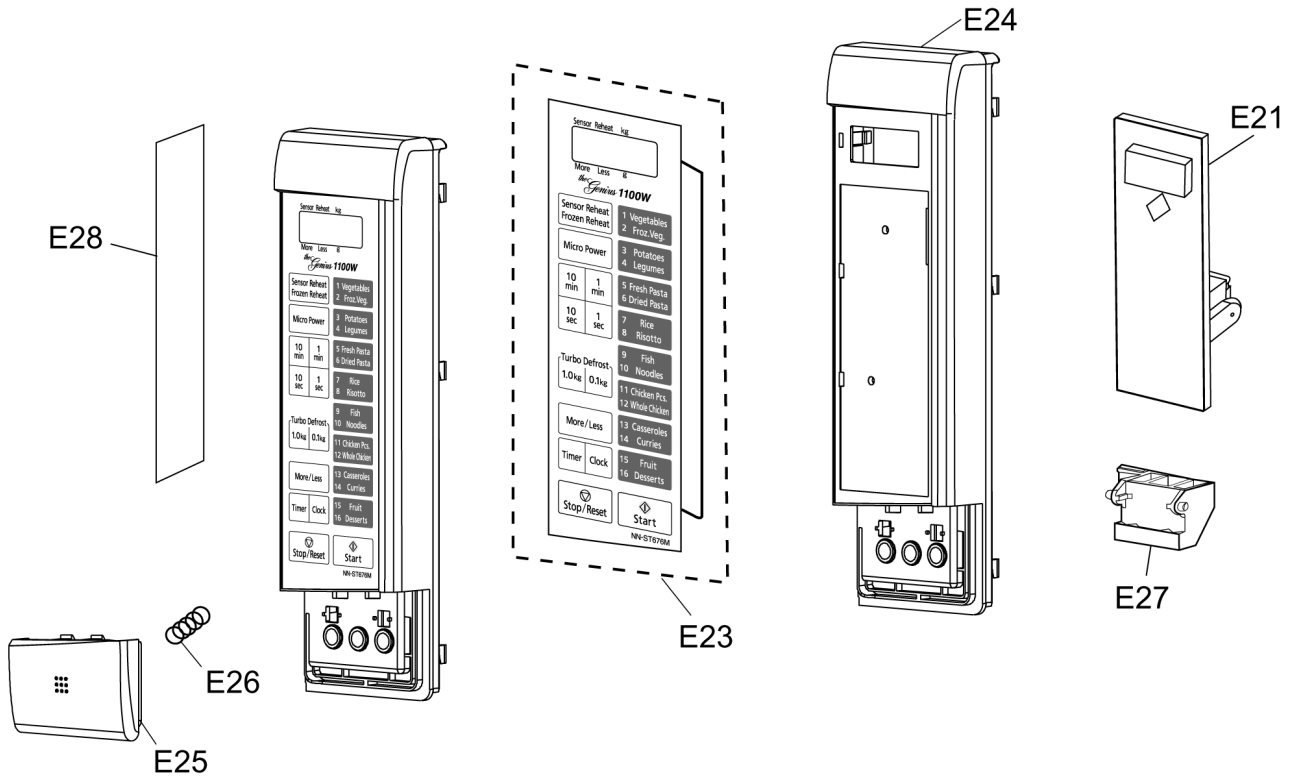
4.5. ESCUTCHEON BASE ASSEMBLY

4.5.1. NN-SD686S



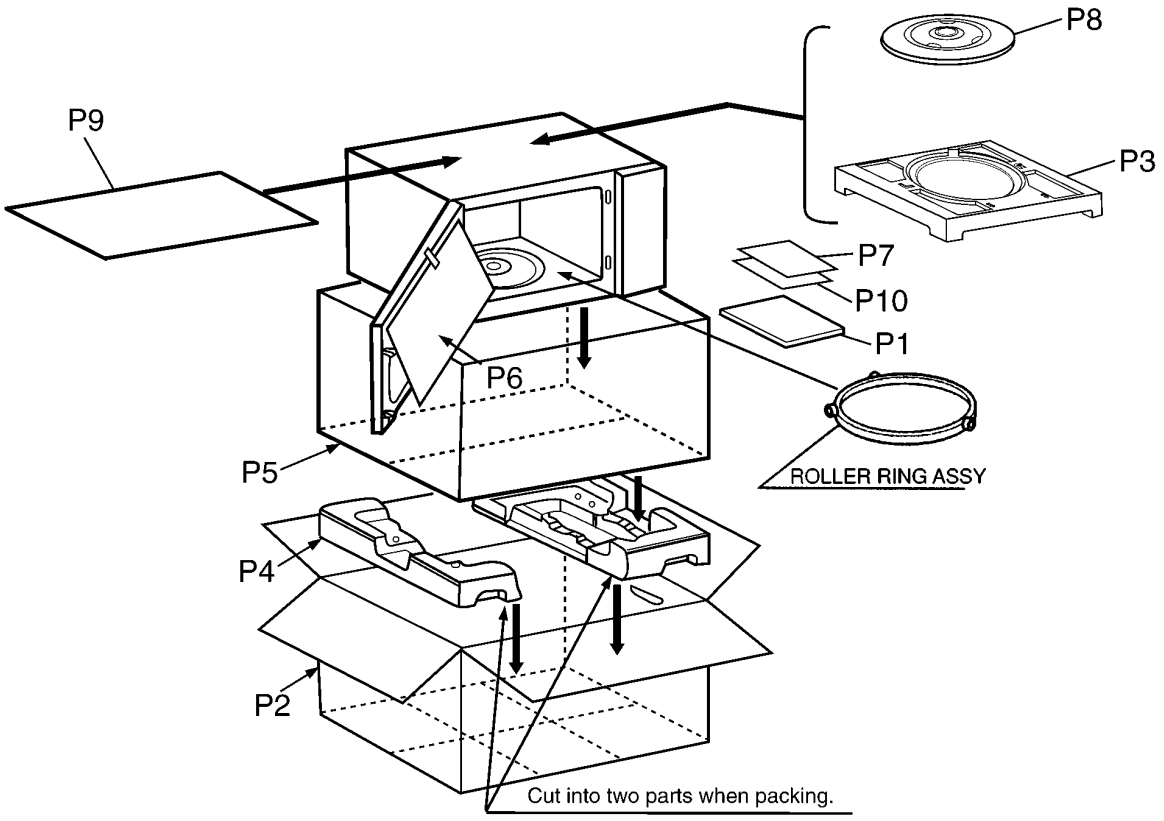
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
E1		F603L8F60QP	D.P.CIRCUIT (AU)	1	SD686S
E2		F603Y8F60QP	D.P.CIRCUIT (DU)	1	SD686S
E3		F800L8F60SQP	ESCUTCHEON BASE (U)	1	SD686S
E4		F66167D00AP	FLAT CABLE	1	SD686S
E6		F80725Y00SAP	DOOR OPENING BUTTON	1	SD686S
E7		F82565Y00AP	DOOR OPENING LEVER	1	SD686S
E8		F80375K00AP	COOK BUTTON SPRING	1	
E9		F630Y8F60SQP	MEMBRANE SWITCH (U)	1	SD686S
E10		F90095X00AP	GROUNDING PANEL	1	SD686S
E11		F803G7D00BAP	POP-UP DIAL (U)	1	SD686S
E12		F80187D00BAP	BACKSTOP	1	SD686S
E15		F00078F60SQP	NAME PLATE	1	SD686S

4.5.2. NN-ST676M, ST666W, ST656W



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
E21		F603L8F70QP	D.P.CIRCUIT (AU)	1	ST676M
E21		F603L8F80QP	D.P.CIRCUIT (AU)	1	ST666W
E21		F603L8F90QP	D.P.CIRCUIT (AU)	1	ST656W
E23		F630Y8F70BQP	MEMBRANE SWITCH (U)	1	ST676M
E23		F630Y8F80BQP	MEMBRANE SWITCH (U)	1	ST666W
E23		F630Y8F90BQP	MEMBRANE SWITCH (U)	1	ST656W
E24		F80348F70SQP	ESCUTCHEON BASE	1	ST676M
E24		F80348F70HQP	ESCUTCHEON BASE	1	ST666W,ST656W
E25		F80728F70SQP	DOOR OPENING BUTTON	1	ST676M
E25		F80728F70HQP	DOOR OPENING BUTTON	1	ST666W,ST656W
E26		F80375K00AP	COOK BUTTON SPRING	1	
E27		F82566K10AP	DOOR OPENING LEVEL	1	ST676M,ST666W,ST656W
E28		F00078F70SQP	NAME PLATE	1	ST676M
E28		F00078F80HQP	NAME PLATE	1	ST666W
E28		F00078F90HQP	NAME PLATE	1	ST656W

4.6. PACKING AND ACCESSORIES



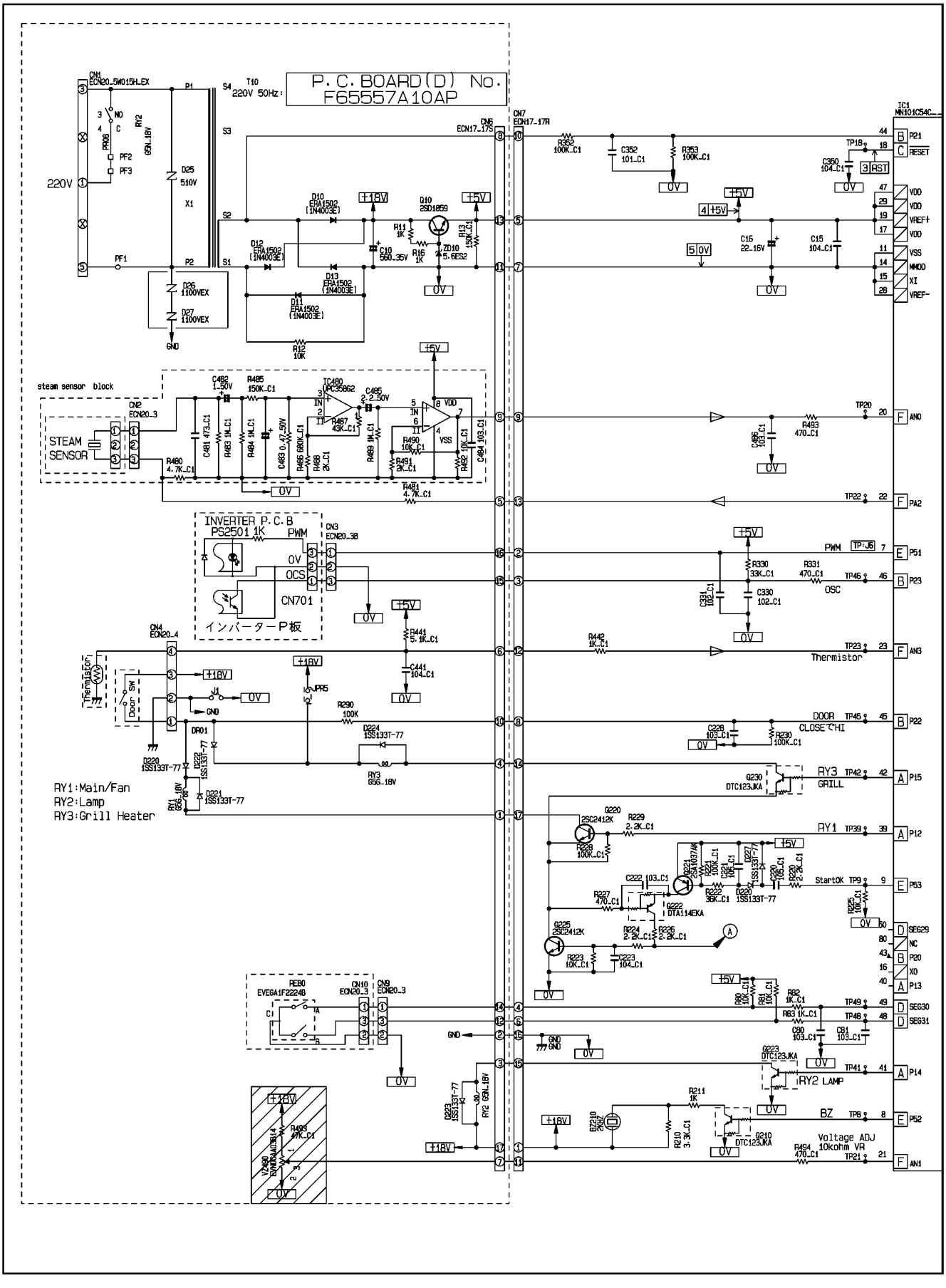
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
P1		F00038F60QP	INSTRUCTION MANUAL	1	SD686S
P1		F00038F70QP	INSTRUCTION MANUAL	1	ST676M,ST666W,ST656W
P2		F01028F60SQP	PACKING CASE,PAPER	1	SD686S
P2		F01028F70SQP	PACKING CASE,PAPER	1	ST676M
P2		F01028F80HQP	PACKING CASE,PAPER	1	ST666W
P2		F01028F90HQP	PACKING CASE,PAPER	1	ST656W
P3		F01046K50AP	UPPER FILLER	1	
P4		F01055L00AP	LOWER FILLER	1	
P5		F01067F00AP	P.E.BAG	1	SD686S
P5		F01068100XN	P.E.BAG	1	ST676M,ST666W,ST656W
P6		F01078100XN	DOOR SHEET	1	
P7		F00166V20QP	NOTICE	1	SD686S
P8		F06014T00AP	COOKING TRAY	1	
P9		F01924T00AP	SHEET	1	ST676M
P10		F00065G40AP	CAUTION LABEL	1	

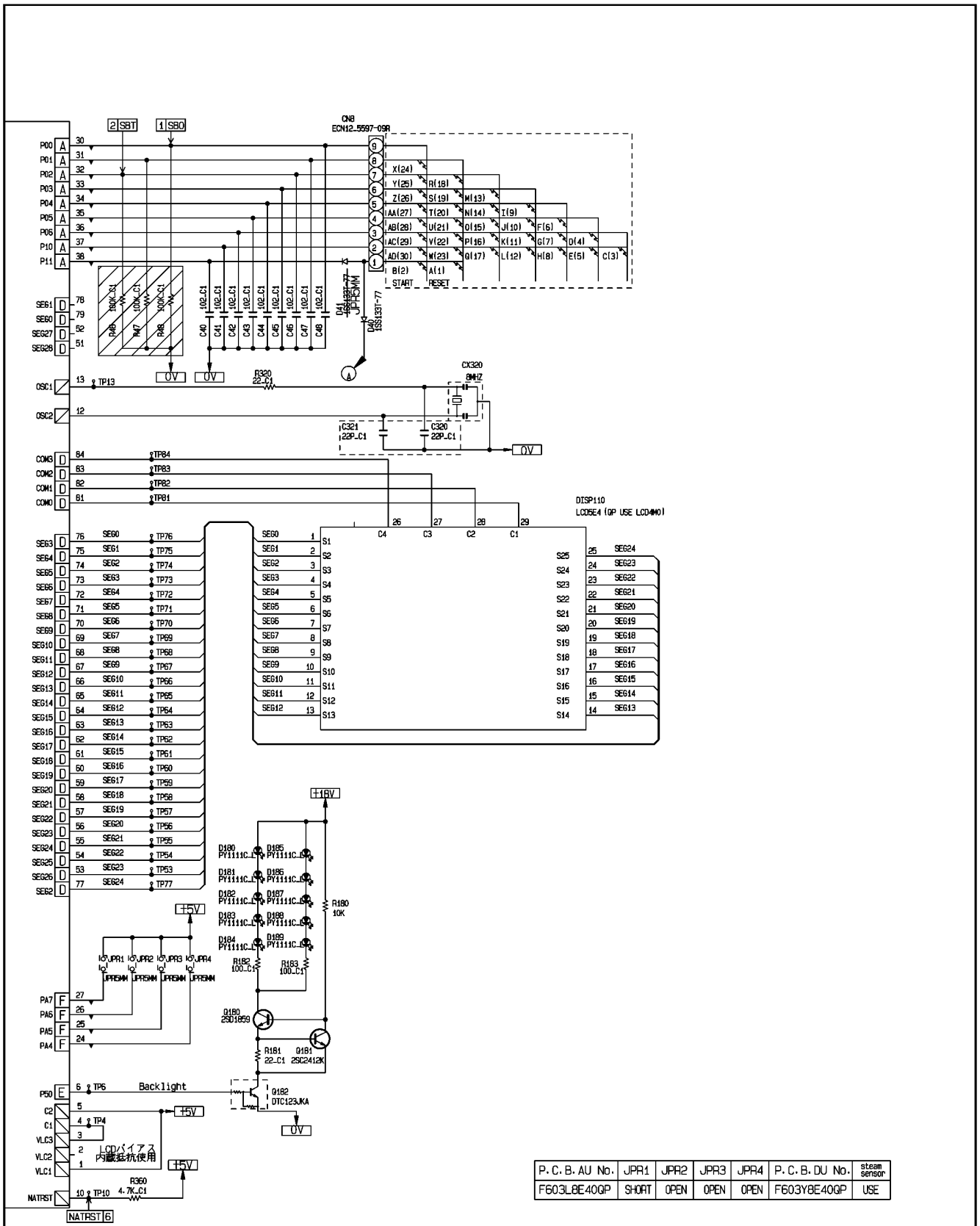
4.7. H.V. INVERTER BOARD MAIN PARTS LIST (F606Y4V00XN)

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
Q701		A691E4V10GP	TRANSISTOR SI	1	
Q702			TRANSISTOR SI	1	
DB701		AESTRS2006M	DIODE SI	1	20A,600V
D701,D702		A62024V00GP	DIODE SI	2	0.3A
C704,C705		ECWH30822JUA	CAPACITOR	2	8200PF 3000VDC
T701		F609A4V00XN	H.V. TRANSFORMER	1	
		F607D4V00XN	D.P.CIRCUIT (KU)	1	
L701		F50204V00XN	CHOKE COIL	1	
CT701		F66904V00XN	CURRENT TRANSFORMER	1	

5 DIGITAL PROGRAMMER CIRCUIT

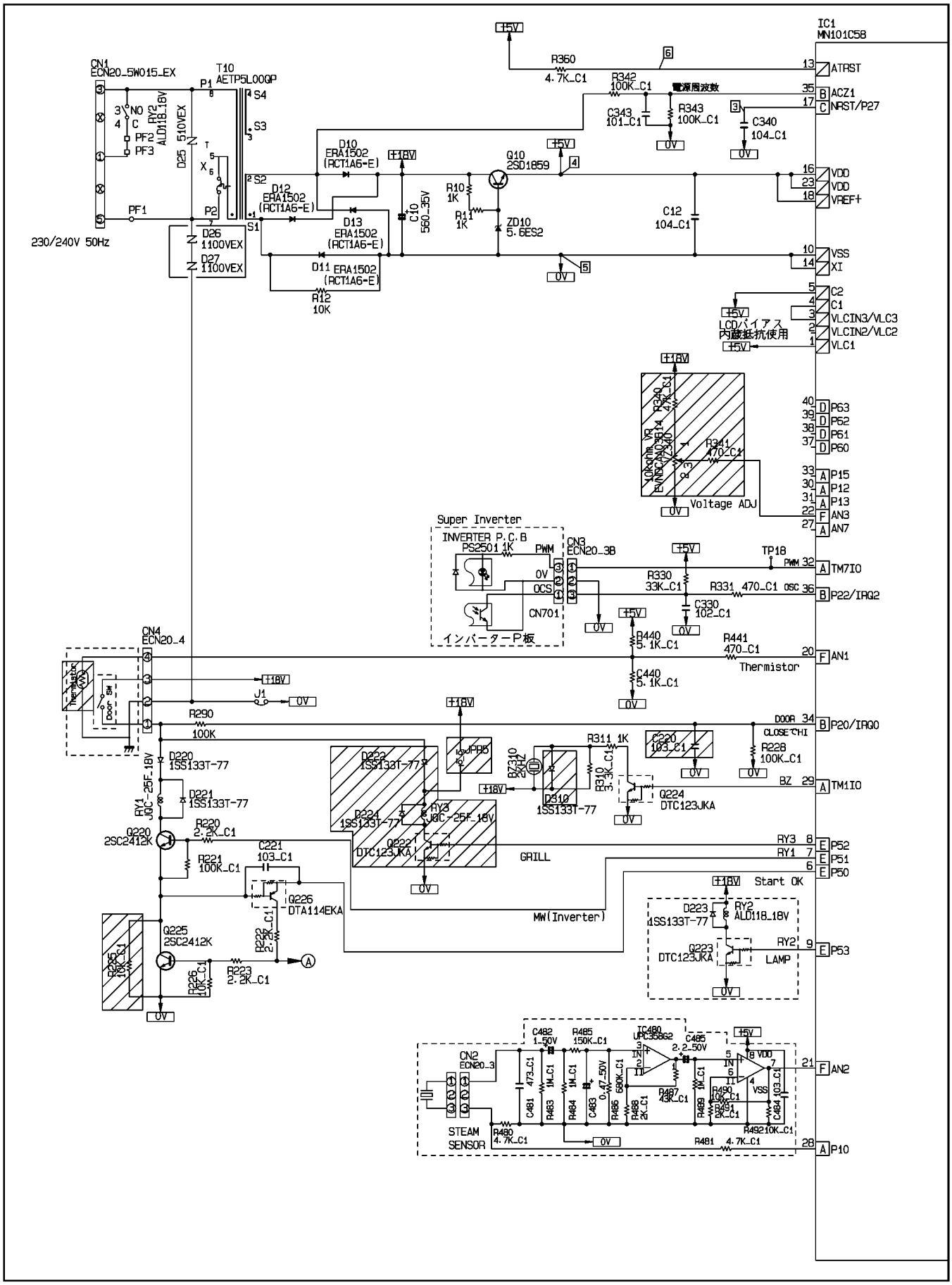
5.1. NN-SD686S

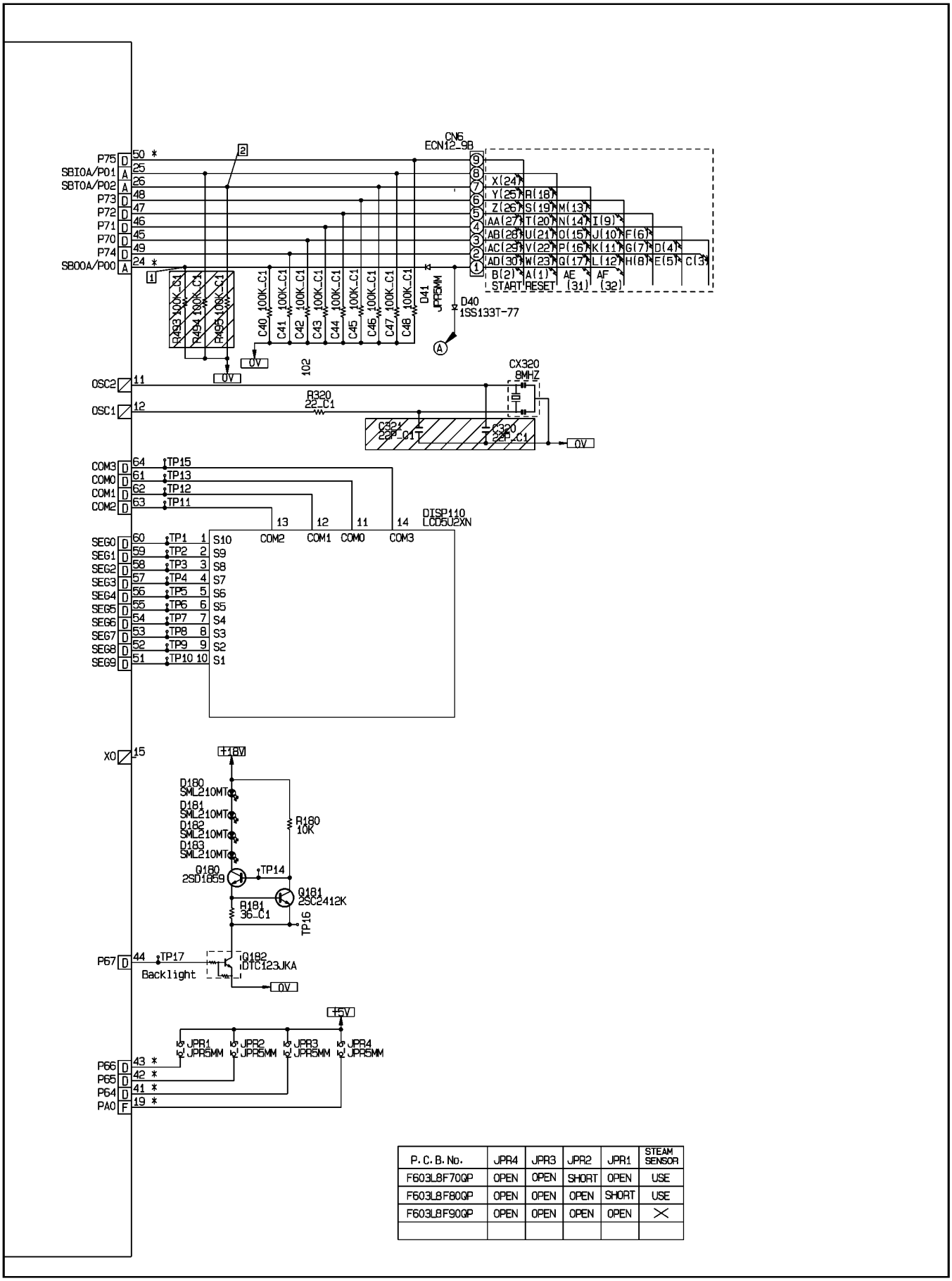




P.C.B.AU No.	JPR1	JPR2	JPR3	JPR4	P.C.B.DU No.	steam sensor
F603L8E40QP	SHORT	OPEN	OPEN	OPEN	F603Y8E40QP	USE

5.2. NN-ST676M, ST666W, ST656W





P.C.B.No.	JPR4	JPR3	JPR2	JPR1	STEAM SENSOR
F603L8F70QP	OPEN	OPEN	SHORT	OPEN	USE
F603L8F80QP	OPEN	OPEN	OPEN	SHORT	USE
F603L8F90QP	OPEN	OPEN	OPEN	OPEN	×

5.3. PARTS LIST

5.3.1. NN-SD686S

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
BZ210		L0DDEA000014	BUZZER	1	2.0KHz
C352		F1H1H1010005	CHIP CAPACITOR	1	100PF/50V
C40-C48,C330,C331		F1H1H102A219	CHIP CAPACITOR	11	1000PF/50V
C80,C81,C222,C228,C484,C486		F1H1H103A220	CHIP CAPACITOR	6	0.01µF/50V
C481		F1H1H473A220	CHIP CAPACITOR	1	0.047µF/50V
C15,C223,C350		F1H1E104A030	CHIP CAPACITOR	3	0.1µF/25V
C220,C221		F1H1A105A019	CHIP CAPACITOR	2	1µF/50V
C10		AECETK1V561B	AL CHEM CAPACITOR	1	560µF/35V
C16		AECETS1C220B	AL CHEM CAPACITOR	1	22µF/16V
C482		AECETS1H010B	AL CHEM CAPACITOR	1	1µF/50V
C483		AECETS1HR47B	AL CHEM CAPACITOR	1	0.47µF/50V
C485		AECETS1H2R2B	AL CHEM CAPACITOR	1	2.2µF/50V
CN1		K1KA03AA0115	CONNECTOR	1	
CN2		K1KA03A00300	CONNECTOR	1	3 Pin
CN3		F03526P40AG	INV. HARNESS (U)	1	
CN4		K1KA04AA0086	CONNECTOR	1	4 Pin
CN6		K1MN17A00001	CONNECTOR	1	17Pin
CN7		K1MN17B00053	CONNECTOR	1	17Pin
CN8		K1MN09BA0072	CONNECTOR	1	
CN9		F03547B40AP	CONNECTOR	1	3 Pin
CX320		EFOEC8004A4	CERAMIC RESONATOR	1	8MHz
IC1		MN101C54CGZ	L.S.I.	1	
IC480		C0ABBA000230	IC	1	
DISP110		L5AAAFD00019	LCD	1	
DISPL1		F66175E40XN	LCD HOLDER	1	
		F67525E40XN	DIFFUSION SHEET	1	
Q181,Q220,Q225		2SD0601A0L	CHIP TRANSISTOR	3	
Q221		2SB709A0L	CHIP TRANSISTOR	1	
Q222		UNR211100L	CHIP DIGI-TRANSISTOR	1	
Q182,Q210,Q223		B1GBCFEL0002	CHIP DIGI-TRANSISTOR	3	
Q10,Q180		B1BAAJ000003	TRANSISTOR	2	
D180-D189		B3ACB0000065	CHIP-LED	10	
D40,D220-D223,D227		B0AACK000004	DIODE	6	
D10,D11,D12,D13		B0EAKT000025	DIODE	4	
D25		D4EAY511A036	VARISTOR	1	510V
D26,D27		D4EAY112A036	VARISTOR	2	
R182,R183		D0GB101JA069	CHIP RESISTOR	2	100Ω,1/10W,5%
R82,R83,R442		D0GB102JA071	CHIP RESISTOR	3	1KΩ,1/10W,5%
R80,R81,R223,R225,R490,R492		D0GB103JA072	CHIP RESISTOR	6	10KΩ,1/10W,5%
R13,R221,R228,R230,R352.R353		D0GB104JA068	CHIP RESISTOR	6	100KΩ,1/10W,5%
R483,R484,R489		D0GB105JA071	CHIP RESISTOR	3	1MΩ,1/10W,5%
R485		D0GB154JA068	CHIP RESISTOR	1	150KΩ,1/10W,5%
R488,R491		D0GB202JA071	CHIP RESISTOR	2	2KΩ,1/10W,5%
R181,R320		D0GB220JA072	CHIP RESISTOR	2	22Ω,1/10W,5%
R220,R224,R226,R229		D0GB222JA072	CHIP RESISTOR	4	2.2KΩ,1/10W,5%
R210		D0GB332JA072	CHIP RESISTOR	1	3.3KΩ,1/10W,5%
R330,R441,C441		D0GB333JA070	CHIP RESISTOR	3	33KΩ,1/10W,5%
R222		D0GB363JA072	CHIP RESISTOR	1	36K,1/10W,5%
R487		D0GB433JA072	CHIP RESISTOR	1	43KΩ,1/10W,5%
R227,R331,R493		D0GB471JA069	CHIP RESISTOR	3	470Ω,1/10W,5%
R360,R480,R481		D0GB472JA072	CHIP RESISTOR	3	4.7KΩ,1/10W,5%
R486		D0GB684JA068	CHIP RESISTOR	1	680KΩ,1/10W,5%
R11,R16,R211		D0AE102JA155	CARBON FILM RESISTOR	3	1KΩ,1/4W,5%
R12,R180		D0AE103JA155	CARBON FILM RESISTOR	2	10KΩ,1/4W,5%
R290		D0AE104JA155	CARBON FILM RESISTOR	1	100KΩ,1/4W,5%
ZD10		B0BA5R600016	ZENER DIODE	1	
RY1		AEBGJQC25F18	POWER RELAY	1	
RY2		K6B1AZA00011	POWER RELAY	1	
T10		G4C3AAH00008	LOW VOLTAGE TRANSFORMER	1	
RE80		EVEJ1HF2224B	REVOLVING ENCODER	1	

5.3.2. NN-ST676M, ST666W, ST656W

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
BZ310		L0DDEA000014	BUZZER	1	2.0KHz
C221		F1H1H103A220	CHIP CAPACITOR	1	0.01µF/50V
C484		F1H1H103A220	CHIP CAPACITOR	1	0.01µF/50V (ST676M,ST666W)
C343		F1H1H1010005	CHIP CAPACITOR	1	100PF/50V
C12,C340		F1H1E104A030	CHIP CAPACITOR	2	0.1µF/25V
C481		F1H1H473A220	CHIP CAPACITOR	1	0.047µF/50V (ST676M,ST666W)
C330		F1H1H102A219	CHIP CAPACITOR	1	1000PF/50V
C10		AECETK1V561B	AL CHEM CAPACITOR	1	560µF/35V
C482		AECETS1H010B	AL CHEM CAPACITOR	1	1µF/50V (ST676M,ST666W)
C483		AECETS1HR47B	AL CHEM CAPACITOR	1	0.47µF/50V (ST676M,ST666W)
C485		AECETS1H2R2B	AL CHEM CAPACITOR	1	2.2µF/50V (ST676M,ST666W)
CN1		K1KA03AA0115	CONNECTOR	1	
CN2		K1KA03A00300	CONNECTOR	1	3 Pin (ST676M,ST666W)
CN3		F03524U00AP	INV.HARNESS (U)	1	3 Pin
CN4		F03535G40XN	HARNESS (U)	1	
CN6		K1MN09AA0040	CONNECTOR	1	9 Pin
CX320		EFOEC8004A4	CERAMIC RESONATOR	1	8.0MHz
DISP110		L5AAAEC00060	LCD	1	
DISP1 HOLDER		F66174U20AP	LCD HOLDER	1	
D10-D13		B0EAKT000025	DIODE	4	
D40,D220,D221,D223		B0AACK000004	DIODE	4	
D25		D4EAY511A036	VARISTOR	1	510V
D26,D27		D4EAY112A036	VARISTOR	2	1100V
D180-D183		B3ACB0000065	CHIP-LED	4	
IC1		MN101C589EX	L.S.I.	1	
IC480		C0ABBA000230	IC	1	(ST676M,ST666W)
Q181,Q220,Q225		2SD0601A0L	CHIP TRANSISTOR	3	
Q226		UNR211100L	CHIP DIGI-TRANSISTOR	1	
Q182,Q223,Q224		B1GBCFEL0002	CHIP DIGI-TRANSISTOR	3	
Q10,Q180		B1BAAJ000003	TRANSISTOR	2	
R226		D0GB103JA072	CHIP RESISTOR	1	10K,1/10W,5%
R490,R492		D0GB103JA072	CHIP RESISTOR	2	10K,1/10W,5% (ST676M,ST666W)
R221,R228,R342,R343,C40-C48		D0GB104JA068	CHIP RESISTOR	13	100K,1/10W,5%
R483,R484,R489		D0GB105JA071	CHIP RESISTOR	3	1MΩ,1/10W,5% (ST676M,ST666W)
R485		D0GB154JA068	CHIP RESISTOR	1	150KΩ,1/10W,5% (ST676M,ST666W)
R488,R491		D0GB202JA071	CHIP RESISTOR	2	2KΩ,1/10W,5% (ST676M,ST666W)
R320		D0GB220JA072	CHIP RESISTOR	1	22Ω,1/10W,5%
R220,R222,R223		D0GB222JA072	CHIP RESISTOR	3	2.2K,1/10W,5%
R310		D0GB332JA072	CHIP RESISTOR	1	3.3K,1/10W,5%
R330		D0GB333JA070	CHIP RESISTOR	1	33K,1/10W,5%
R181		D0GB360JA072	CHIP RESISTOR	1	36Ω,1/10W,5%
R331,R441		D0GB471JA069	CHIP RESISTOR	2	470Ω,1/10W,5%
R360		D0GB472JA072	CHIP RESISTOR	1	4.7K,1/10W,5%
R480,R481		D0GB472JA072	CHIP RESISTOR	2	4.7K,1/10W,5% (ST676M,ST666W)
R487		D0GB433JA072	CHIP RESISTOR	1	43KΩ,1/10W,5%
R440,C440		D0GB512JA072	CHIP RESISTOR	2	5.1KΩ,1/10W,5%
R486		D0GB684JA068	CHIP RESISTOR	1	680KΩ,1/10W,5% (ST676M,ST666W)
R10,R11,R311		D0AE102JA155	CARBON RESISTOR	3	1K,1/4W,5%
R12,R180		D0AE103JA155	CARBON RESISTOR	2	10K,1/4W,5%
R290		D0AE104JA155	CARBON RESISTOR	1	100K,1/4W,5%
RY1		AEBGJQC25F18	POWER RELAY	1	18V
RY2		K6B1AZA00011	POWER RELAY	1	18V
T10		G4C3AAH00008	LOW VOLTAGE TRANSFORMER	1	
ZD10		B0BA5R600016	ZENER DIODE	1	